Claims

1. A system processing a sample list of at least two digitized samples based upon at least one electromagnetic receptor using a truncated pseudo-inverse B1 of a linear transform A1, comprising:

at least one processing engine receptively coupled to said electromagnetic receptors to provide said digitized samples controlled by a program system comprising program steps residing in memory accessibly coupled to said processing engine;

wherein said program system comprising the program steps of:

receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

processing said received sample list by using said truncated pseudo-inverse B1 on at least some of said received samples to create a received signal parameter list containing at least one received signal parameter;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of linear transform A1; and

wherein said truncated pseudo-inverse B1 of said linear transform A1 is based upon a pseudo-inverse of A1 belonging to at least one member of the pseudo-inverse type collection comprising A1{1}, A1{2}, A1{3}, A1{4}, a Drazin inverse of A1, and a Moore-Penrose inverse A1{1,2,3,4}.

2. The system of Claim 1,

wherein said electromagnetic receptor includes at least one antenna element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field proximate with said antenna element.

3. The system of Claim 2,

wherein said electromagnetic receptor includes at least two antenna elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from said electromagnetic fields proximate with said antenna elements.

4. The system of Claim 1,

wherein said electromagnetic receptor includes at least one semiconductor receptor element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor element.

5. The system of Claim 4,

wherein said electromagnetic receptor further includes at least two semiconductor receptor elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor elements.

6. The system of Claim 1,

wherein said electromagnetic receptor is comprised of a first electromagnetic receptor and a second electromagnetic receptor.

7. The system of Claim 6,

wherein the program step receiving said sample list based upon said electromagnetic receptor is further comprised of at least one of the collection comprising the program steps of:

receiving a first sample list based upon said first electromagnetic receptor to create said received sample list containing at least two received samples; and

receiving a second sample list based upon said second electromagnetic receptor to create said received sample list containing at least two received samples.

8. The system of Claim 7,

wherein the program step receiving said first sample list based upon said first electromagnetic receptor is further comprised of the program step of:

receiving a first sample list based upon said first electromagnetic receptor to create a first received sample list containing at least two received first samples; and

wherein the program step receiving said second sample list based upon said second electromagnetic receptor is further comprised of the program step of:

receiving a second sample list based upon said second electromagnetic receptor to create a second received sample list containing at least two received second samples.

9. The system of Claim 8,

wherein the program step processing said received sample list is further comprised of at least one member of the collection comprising the program steps of:

processing said first received sample list by using said truncated pseudo-inverse B1 on at least some of said first received samples to create a first received signal parameter list containing at least one first received signal parameter; and

processing said second received sample list by using said truncated pseudo-inverse B1 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

10. The system of Claim 8,

wherein the program step processing said received sample list is further comprised of the program step of:

processing said second received sample list by using a second truncated pseudo-inverse B2 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

11. The system of Claim 1,

wherein said truncated pseudo-inverse B1 contains at least a third truncated pseudo-inverse B3 and a fourth truncated pseudo-inverse B4;

wherein the program step processing said received sample list further comprises the program steps of:

processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter; and

processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter.

12. A system of determining availability of a first communications service based upon said third truncated pseudo-inverse B3 and of a second communications service based upon said fourth truncated pseudo-inverse B4 comprising:

said system of Claim 11;

wherein said program system is further comprised of the program steps of:

determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination.

13. The system of Claim 12,

wherein the program step determining said first communications service availability is further comprised of the program steps of:

detecting system communication based upon said third received signal parameter list to create a first system channel detection; and

generating said first communications service determination based upon said first system channel detection.

14. The system of Claim 12,

wherein the program step determining said second communications service availability is further comprised of the program steps of:

estimating a first energy term based upon said fourth received signal parameter list and a second energy term based upon said fourth received signal parameter list; and

generating said second communications service determination based upon said first energy estimate exceeding said second energy estimate multiplied by a threshold value.

15. The system of Claim 14,

wherein said second communications service determination includes a Clear Channel Access determination.

16. The system of Claim 14,

wherein said linear transform A1 includes a member of a collection comprising an FFT and an IFFT.

17. The system of Claim 16,

wherein linear transform A1 is said IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse B1 provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

18. The system of Claim 17,

wherein said program system is further comprised of the program step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

19. The system of Claim 18,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

20. The system of Claim 1,

wherein said linear transform A1 is a member of a collection comprising an FFT and an IFFT.

21. The system of Claim 20,

wherein linear transform A1 is said IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse B1 provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

22. The system of Claim 21,

wherein said program systems is further comprised of the program step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

23. The system of Claim 22,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

24. The system of Claim 1,

wherein said sample list is further based upon a transported version of a baseband signal progression generated using at least part of linear transform A1.

25. The system of Claim 24,

wherein said baseband signal progression is generated as a signal progression using at least part of a second linear transform A2.

26. The system of Claim 25,

wherein said second linear transform A2 is approximately similar to a Hadamard transform.

27. The system of Claim 26,

wherein said second linear transform A2 is further approximately similar to a Walsh-Hadamard transform.

28. The system of Claim 25,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of a second linear transform A2.

29. The system of Claim 28,

wherein using said at least part of said second linear transform A2 provides a scattering transform applied to a time progression generated by using at least part of a spreading linear transform A3.

30. The system of Claim 29,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of said second linear transform A2 applied to said at least part of said spreading linear transform A3.

31. A method of processing a sample list of at least two digitized samples based upon at least one electromagnetic receptor using a truncated pseudo-inverse B1 of a linear transform A1, comprising the steps of:

receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

processing said received sample list by using said truncated pseudo-inverse B1 on at least some of said received samples to create a received signal parameter list containing at least one received signal parameter;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of linear transform A1; and

wherein said truncated pseudo-inverse B1 of said linear transform A1 is based upon a pseudo-inverse of A1 belonging to at least one member of the pseudo-inverse type collection comprising A1{1}, A1{2}, A1{3}, A1{4}, a Drazin inverse of A1, and a Moore-Penrose inverse A1{1,2,3,4}.

32. The method of Claim 31,

wherein said electromagnetic receptor includes at least one antenna element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field proximate with said antenna element.

33. The method of Claim 32,

wherein said electromagnetic receptor includes at least two antenna elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from said electromagnetic fields proximate with said antenna elements.

34. The method of Claim 31,

wherein said electromagnetic receptor includes at least one semiconductor receptor element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor element.

35. The method of Claim 34,

wherein said electromagnetic receptor further includes at least two semiconductor receptor elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor elements.

36. The method of Claim 31,

wherein said electromagnetic receptor is comprised of a first electromagnetic receptor and a second electromagnetic receptor.

37. The method of Claim 36,

wherein the step receiving said sample list based upon said electromagnetic receptor is further comprised of at least one of the collection comprising the steps of:

receiving a first sample list based upon said first electromagnetic receptor to create said received sample list containing at least two received samples; and

receiving a second sample list based upon said second electromagnetic receptor to create said received sample list containing at least two received samples.

38. The method of Claim 37,

wherein the step receiving said first sample list based upon said first electromagnetic receptor is further comprised of the step of:

receiving a first sample list based upon said first electromagnetic receptor to create a first received sample list containing at least two received first samples; and

wherein the step receiving said second sample list based upon said second electromagnetic receptor is further comprised of the step of:

receiving a second sample list based upon said second electromagnetic receptor to create a second received sample list containing at least two received second samples.

39. The method of Claim 38,

wherein the step processing said received sample list is further comprised of at least one member of the collection comprising the steps of:

processing said first received sample list by using said truncated pseudo-inverse B1 on at least some of said first received samples to create a first received signal parameter list containing at least one first received signal parameter; and

processing said second received sample list by using said truncated pseudo-inverse B1 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

40. The method of Claim 38,

wherein the step processing said received sample list is further comprised of the step of:

processing said second received sample list by using a second truncated pseudo-inverse B2 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

41. The method of Claim 31,

wherein said truncated pseudo-inverse B1 contains at least a third truncated pseudo-inverse B3 and a fourth truncated pseudo-inverse B4;

wherein the step processing said received sample list further comprises the steps of:

processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter; and

processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter.

42. A method of determining availability of a first communications service based upon said third truncated pseudo-inverse B3 and of a second communications service based upon said fourth truncated pseudo-inverse B4 of the method of Claim 41, comprising the steps of:

the method of Claim 41; and further comprising the steps of:

determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination.

43. The method of Claim 42,

wherein the step determining said first communications service availability is further comprised of the steps of:

detecting system communication based upon said third received signal parameter list to create a first system channel detection; and

generating said first communications service determination based upon said first system channel detection.

44. The method of Claim 42,

wherein the step determining said second communications service availability is further comprised of the steps of:

estimating a first energy term based upon said fourth received signal parameter list and a second energy term based upon said fourth received signal parameter list; and

generating said second communications service determination based upon said first energy estimate exceeding said second energy estimate multiplied by a threshold value.

45. The method of Claim 44,

wherein said second communications service determination includes a Clear Channel Access determination.

46. The method of Claim 44,

wherein said linear transform A1 includes a member of a collection comprising an FFT and an IFFT.

47. The method of Claim 46,

wherein linear transform A1 is said IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse B1 provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

48. The method of Claim 47, further comprising the step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second

received signal parameter list containing at least one second received signal parameter.

49. The method of Claim 48,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

50. The method of Claim 31,

wherein said linear transform A1 is a member of a collection comprising an FFT and an IFFT.

51. The method of Claim 50,

wherein linear transform A1 is said IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse B1 provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

52. The method of Claim 51, further comprising the step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

53. The method of Claim 52,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

54. The method of Claim 31,

wherein said sample list is further based upon a transported version of a baseband signal progression generated using at least part of linear transform A1.

55. The method of Claim 54,

wherein said baseband signal progression is generated as a signal progression using at least part of a second linear transform A2.

56. The method of Claim 55,

wherein said second linear transform A2 is approximately similar to a Hadamard transform.

57. The method of Claim 56,

wherein said second linear transform A2 is further approximately similar to a Walsh-Hadamard transform.

58. The method of Claim 55,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of a second linear transform A2.

59. The method of Claim 58,

wherein using said at least part of said second linear transform A2 provides a scattering transform applied to a time progression generated by using at least part of a spreading linear transform A3.

60. The method of Claim 59,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of said second linear transform A2 applied to said at least part of said spreading linear transform A3.

61. A program system implementing the method of Claim 31,

wherein said program system controlling reception of communications encoded as a time progression using said linear transformation A1 through the execution of program steps implementing at least the steps of the method,

wherein said program system is comprised of said program steps residing in memory accessibly coupled to at least one processing engine receptively coupled to said electromagnetic receptors to provide said digitized samples.

62. A system for processing a sample list of at least two digitized samples based upon at least one electromagnetic receptor using a truncated pseudo-inverse B1 of a linear transform A1 implementing the method of Claim 31, comprising:

means for receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

means for processing said received sample list by using said truncated pseudo-inverse B1 to at least some of said received samples to create a received signal parameter list containing at least one received signal parameter;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of linear transform A1.

63. The system of Claim 62,

wherein said means for receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples, is further comprised of:

a finite state machine controlling a buffer memory containing at least two memory locations through the operation of at least two finite states of a finite states of said finite state machine; and

said buffer memory receptively coupled to said electromagnetic receptor;

wherein said finite state machine operating through said at least two finite states causes said buffer memory to contain said received samples contained in said received sample list.

64. The system of Claim 62,

wherein said means for processing said received sample list by using said truncated pseudo-inverse B1 is further comprised of:

an arithmetic circuit implementing said truncated pseudo-inverse B1 acting on at least some of said received samples to create said received signal parameter list containing said at least one received signal parameter;

wherein said means for receiving said received sample list provides said received samples to said arithmetic circuit.

65. The system of Claim 64,

wherein said arithmetic circuit implementing said truncated pseudo-inverse B1 is controlled by a second finite state machine.

66. The system of Claim 65,

wherein said second finite state machine includes a state register containing a program counter.

67. The system of Claim 64,

wherein said arithmetic circuit implementing said truncated pseudo-inverse B1 is controlled strictly by input-output stimulus.

68. A system determining availability of a first communications service based upon a third truncated pseudo-inverse B3 and of a second communications service based upon a fourth truncated pseudo-inverse B4 from a sample list of at least two digitized samples based upon at least one electromagnetic receptor, comprising:

at least one processing engine receptively coupled to said electromagnetic receptors to provide said digitized samples controlled by a

program system comprising program steps residing in memory accessibly coupled to said processing engine;

wherein said program system is comprised of the program steps of:

receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter;

processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter;

determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination;

wherein a truncated pseudo-inverse B3 is based upon a linear transform A1;

wherein said fourth truncated pseudo-inverse B4 is based upon a linear transform A2;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of at least one member of a

linear transform collection comprising said linear transform A1 and said linear transform A2; and

wherein said truncated pseudo-inverse B1 of said linear transform A1 is based upon a pseudo-inverse of A1 belonging to at least one member of the pseudo-inverse type collection comprising A1{1}, A1{2}, A1{3}, A1{4}, a Drazin inverse of A1, and a Moore-Penrose inverse A1{1,2,3,4}.

69. The system of Claim 68,

wherein said electromagnetic receptor includes at least one antenna element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field proximate with said antenna element.

70. The system of Claim 69,

wherein said electromagnetic receptor includes at least two antenna elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from said electromagnetic fields proximate with said antenna elements.

71. The system of Claim 68,

wherein said electromagnetic receptor includes at least one semiconductor receptor element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor element.

72. The system of Claim 71,

wherein said electromagnetic receptor further includes at least two semiconductor receptor elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor elements.

73. The system of Claim 68,

wherein said electromagnetic receptor is comprised of a first electromagnetic receptor and a second electromagnetic receptor.

74. The system of Claim 73,

wherein the program step receiving said sample list based upon said electromagnetic receptor is further comprised of at least one of the collection comprising the program steps of:

receiving a first sample list based upon said first electromagnetic receptor to create said received sample list containing at least two received samples; and

receiving a second sample list based upon said second electromagnetic receptor to create said received sample list containing at least two received samples.

75. The system of Claim 74,

wherein the program step receiving said first sample list based upon said first electromagnetic receptor is further comprised of the program step of:

receiving a first sample list based upon said first electromagnetic receptor to create a first received sample list containing at least two received first samples; and

wherein the program step receiving said second sample list based upon said second electromagnetic receptor is further comprised of the program step of:

receiving a second sample list based upon said second electromagnetic receptor to create a second received sample list containing at least two received second samples.

76. The system of Claim 75,

wherein the program step processing said received sample list is further comprised of at least one member of the collection comprising the program steps of:

processing said first received sample list by using said truncated pseudo-inverse B1 on at least some of said first received samples to create a first received signal parameter list containing at least one first received signal parameter; and

processing said second received sample list by using said truncated pseudo-inverse B1 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

77. The system of Claim 68,

wherein the program step determining said first communications service availability is further comprised of the program steps of:

detecting system communication based upon said third received signal parameter list to create a first system channel detection; and

generating said first communications service determination based upon said first system channel detection.

78. The system of Claim 68,

wherein the program step determining said second communications service availability is further comprised of the program steps of:

estimating a first energy term based upon said fourth received signal parameter list and a second energy term based upon said fourth received signal parameter list; and

generating said second communications service determination based upon said first energy estimate exceeding said second energy estimate multiplied by a threshold value.

79. The system of Claim 78,

wherein said second communications service determination includes a Clear Channel Access determination.

80. The system of Claim 78,

wherein at least one member of the linear transform collection includes a member of the collection comprising an FFT and an IFFT.

81. The system of Claim 80,

wherein at least one member of said linear transform collection is said IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse using said member provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

82. The system of Claim 81, further comprising the program step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

83. The system of Claim 82,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

84. The system of Claim 68,

wherein said sample list is further based upon a transported version of a baseband signal progression generated using at least part of at least one member of said linear transform collection.

85. The system of Claim 84,

wherein said linear transform collection further comprises at least one encoding linear transform; and

wherein said baseband signal progression is generated as a signal progression using at least part of at least one member of said linear transform collection.

86. The system of Claim 85,

wherein at least one of said encoding transforms is approximately similar to a Hadamard transform.

87. The system of Claim 86,

wherein at least one of said encoding transforms is further approximately similar to a Walsh-Hadamard transform.

88. The system of Claim 85,

wherein at least one of said truncating pseudo-inverses approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of said encoding transforms.

89. The system of Claim 88,

wherein at least one of said encoding linear transforms provides a scattering transform applied to a time progression generated by using at least part of a spreading linear transform.

90. The system of Claim 89,

wherein at least one of said truncating pseudo-inverses approximates a pseudo-inverse of said at least part of scattering transform applied to said spreading transform.

91. The system of Claim 68,

wherein said linear transform A1 is determined by at least one physical transport layer across which said sample list is transported.

92. A method of determining availability of a first communications service based upon a third truncated pseudo-inverse B3 and of a second communications service based upon a fourth truncated pseudo-inverse B4 from a sample list of at least two digitized samples based upon at least one electromagnetic receptor, comprising the steps of:

receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter;

processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter;

determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination;

wherein a truncated pseudo-inverse B3 is based upon a linear transform A1;

wherein said fourth truncated pseudo-inverse B4 is based upon a linear transform A2;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of at least one member of a linear transform collection comprising said linear transform A1 and said linear transform A2;

wherein said truncated pseudo-inverse B3 of said linear transform A3 is based upon a pseudo-inverse of A3 belonging to at least one member of the pseudo-inverse type collection comprising A3{1}, A3{2}, A3{3}, A3{4}, a Drazin inverse of A3, and a Moore-Penrose inverse A3{1,2,3,4}; and

wherein said truncated pseudo-inverse B4 of said linear transform A4 is based upon a pseudo-inverse of A4 belonging to at least one member of the pseudo-inverse type collection comprising A4{1}, A4{2}, A4{3}, A4{4}, a Drazin inverse of A4, and a Moore-Penrose inverse A4{1,2,3,4}.

93. The method of Claim 92,

wherein said electromagnetic receptor includes at least one antenna element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field proximate with said antenna element.

94. The method of Claim 93,

wherein said electromagnetic receptor includes at least two antenna elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from said electromagnetic fields proximate with said antenna elements.

95. The method of Claim 92,

wherein said electromagnetic receptor includes at least one semiconductor receptor element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor element.

96. The method of Claim 95,

wherein said electromagnetic receptor further includes at least two semiconductor receptor elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor elements.

97. The method of Claim 92,

wherein said electromagnetic receptor is comprised of a first electromagnetic receptor and a second electromagnetic receptor.

98. The method of Claim 97,

wherein the step receiving said sample list based upon said electromagnetic receptor is further comprised of at least one of the collection comprising the steps of:

receiving a first sample list based upon said first electromagnetic receptor to create said received sample list containing at least two received samples; and

receiving a second sample list based upon said second electromagnetic receptor to create said received sample list containing at least two received samples.

99. The method of Claim 98,

wherein the step receiving said first sample list based upon said first electromagnetic receptor is further comprised of the step of:

receiving a first sample list based upon said first electromagnetic receptor to create a first received sample list containing at least two received first samples; and

wherein the step receiving said second sample list based upon said second electromagnetic receptor is further comprised of the step of:

receiving a second sample list based upon said second electromagnetic receptor to create a second received sample list containing at least two received second samples.

100. The method of Claim 99,

wherein the step processing said received sample list is further comprised of at least one member of the collection comprising the steps of:

processing said first received sample list by using said truncated pseudo-inverse B1 on at least some of said first received samples to create a first received signal parameter list containing at least one first received signal parameter; and

processing said second received sample list by using said truncated pseudo-inverse B1 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

101. The method of Claim 92,

wherein the step determining said first communications service availability is further comprised of the steps of:

detecting system communication based upon said third received signal parameter list to create a first system channel detection; and

generating said first communications service determination based upon said first system channel detection.

102. The method of Claim 92,

wherein the step determining said second communications service availability is further comprised of the steps of:

estimating a first energy term based upon said fourth received signal parameter list and a second energy term based upon said fourth received signal parameter list; and

generating said second communications service determination based upon said first energy estimate exceeding said second energy estimate multiplied by a threshold value.

103. The method of Claim 102,

wherein said second communications service determination includes a Clear Channel Access determination.

104. The method of Claim 102,

wherein at least one member of the linear transform collection includes a member of the collection comprising an FFT and an IFFT.

105. The method of Claim 104,

wherein at least one member of said linear transform collection is said IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse using said member provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

106. The method of Claim 105, further comprising the step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

107. The method of Claim 106,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

108. The method of Claim 92,

wherein said sample list is further based upon a transported version of a baseband signal progression generated using at least part of at least one member of said linear transform collection.

109. The method of Claim 108,

wherein said linear transform collection further comprises at least one encoding linear transform; and

wherein said baseband signal progression is generated as a signal progression using at least part of at least one member of said linear transform collection.

110. The method of Claim 109,

wherein at least one of said encoding transforms is approximately similar to a Hadamard transform.

111. The method of Claim 110,

wherein at least one of said encoding transforms is further approximately similar to a Walsh-Hadamard transform.

112. The method of Claim 109,

wherein at least one of said truncating pseudo-inverses approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of said encoding transforms.

113. The method of Claim 112,

wherein at least one of said encoding linear transforms provides a scattering transform applied to a time progression generated by using at least part of a spreading linear transform.

114. The method of Claim 113,

wherein at least one of said truncating pseudo-inverses approximates a pseudo-inverse of said at least part of scattering transform applied to said spreading transform.

115. A program system implementing the method of Claim 92,

wherein said program system controlling reception of communications encoded as a time progression using said linear transformation A1 through the execution of program steps implementing at least the steps of the method,

wherein said program system is comprised of said program steps residing in memory accessibly coupled to at least one processing engine receptively coupled to said electromagnetic receptors to provide said digitized samples.

116. A system determining availability of a first communications service based upon a third truncated pseudo-inverse B3 and of a second communications service based upon a fourth truncated pseudo-inverse B4 from a sample list of at least two digitized samples based upon at least one electromagnetic receptor implementing the method of Claim 92, comprising:

means for receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

means for processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter; and

means for processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter;

means for determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

means for determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination.

wherein a truncated pseudo-inverse B3 is based upon a linear transform A1; and

wherein said fourth truncated pseudo-inverse B4 is based upon a linear transform A2;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of at least one member of a linear transform collection comprising said linear transform A1 and said linear transform A2.

117. The system of Claim 116,

wherein said means for receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples, is further comprised of:

a finite state machine controlling a buffer memory containing at least two memory locations through the operation of at least two finite states of a finite states of said finite state machine; and

said buffer memory receptively coupled to said electromagnetic receptor;

wherein said finite state machine operating through said at least two finite states causes said buffer memory to contain said received samples contained in said received sample list.

118. The system of Claim 116,

wherein said means for processing said received sample list by using said truncated pseudo-inverse B3 is further comprised of:

an arithmetic circuit implementing said truncated pseudo-inverse B1 acting on at least some of said received samples to create said received signal parameter list containing said at least one received signal parameter;

wherein said means for receiving said received sample list provides said received samples to said arithmetic circuit.

119. The system of Claim 118,

wherein said arithmetic circuit implementing said truncated pseudo-inverse B3 is controlled by a second finite state machine.

120. The system of Claim 119,

wherein said second finite state machine includes a state register containing a program counter.

121. The system of Claim 118,

wherein said arithmetic circuit implementing said truncated pseudo-inverse B3 is controlled strictly by input-output stimulus.

122. A system processing a sample list of at least two digitized samples based upon at least one electromagnetic receptor using a truncated pseudo-inverse B1 of a linear transform A1, comprising:

at least one processing engine receptively coupled to said electromagnetic receptors to provide said digitized samples controlled by a program system comprising program steps residing in memory accessibly coupled to said processing engine;

wherein said program system comprising the program steps of:

receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

processing said received sample list by using said truncated pseudo-inverse B1 on at least some of said received samples to create a received signal parameter list containing at least one received signal parameter;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of linear transform A1;

wherein said linear transform A1 includes an IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse B1 provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission.

123. The system of Claim 122,

wherein said electromagnetic receptor includes at least one antenna element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field proximate with said antenna element.

124. The system of Claim 123,

wherein said electromagnetic receptor includes at least two antenna elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from said electromagnetic fields proximate with said antenna elements.

125. The system of Claim 122,

wherein said electromagnetic receptor includes at least one semiconductor receptor element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor element.

126. The system of Claim 125,

wherein said electromagnetic receptor further includes at least two semiconductor receptor elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor elements.

127. The system of Claim 122,

wherein said electromagnetic receptor is comprised of a first electromagnetic receptor and a second electromagnetic receptor.

128. The system of Claim 127,

wherein the program step receiving said sample list based upon said electromagnetic receptor is further comprised of at least one of the collection comprising the program steps of:

receiving a first sample list based upon said first electromagnetic receptor to create said received sample list containing at least two received samples; and

receiving a second sample list based upon said second electromagnetic receptor to create said received sample list containing at least two received samples.

129. The system of Claim 128,

wherein the program step receiving said first sample list based upon said first electromagnetic receptor is further comprised of the program step of:

receiving a first sample list based upon said first electromagnetic receptor to create a first received sample list containing at least two received first samples; and

wherein the program step receiving said second sample list based upon said second electromagnetic receptor is further comprised of the program step of:

receiving a second sample list based upon said second electromagnetic receptor to create a second received sample list containing at least two received second samples.

130. The system of Claim 129,

wherein the program step processing said received sample list is further comprised of at least one member of the collection comprising the program steps of:

processing said first received sample list by using said truncated pseudo-inverse B1 on at least some of said first received samples to create a first received signal parameter list containing at least one first received signal parameter; and

processing said second received sample list by using said truncated pseudo-inverse B1 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

131. The system of Claim 129,

wherein the program step processing said received sample list is further comprised of the program step of:

processing said second received sample list by using a second truncated pseudo-inverse B2 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

132. The system of Claim 122,

wherein said truncated pseudo-inverse B1 contains at least a third truncated pseudo-inverse B3 and a fourth truncated pseudo-inverse B4;

wherein the program step processing said received sample list further comprises the program steps of:

processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter; and

processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter.

133. A system of determining availability of a first communications service based upon said third truncated pseudo-inverse B3 and of a second communications service based upon said fourth truncated pseudo-inverse B4 comprising:

said system of Claim 132;

wherein said program system is further comprised of the program steps of:

determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination.

134. The system of Claim 133,

wherein the program step determining said first communications service availability is further comprised of the program steps of:

detecting system communication based upon said third received signal parameter list to create a first system channel detection; and

generating said first communications service determination based upon said first system channel detection.

135. The system of Claim 133,

wherein the program step determining said second communications service availability is further comprised of the program steps of:

estimating a first energy term based upon said fourth received signal parameter list and a second energy term based upon said fourth received signal parameter list; and

generating said second communications service determination based upon said first energy estimate exceeding said second energy estimate multiplied by a threshold value.

136. The system of Claim 135,

wherein said second communications service determination includes a Clear Channel Access determination.

137. The system of Claim 122,

wherein said program systems is further comprised of the program step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

138. The system of Claim 137,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

139. The system of Claim 122,

wherein said sample list is further based upon a transported version of a baseband signal progression generated using at least part of linear transform A1.

140. The system of Claim 139,

wherein said baseband signal progression is generated as a signal progression using at least part of a second linear transform A2.

141. The system of Claim 140,

wherein said second linear transform A2 is approximately similar to a Hadamard transform.

142. The system of Claim 141,

wherein said second linear transform A2 is further approximately similar to a Walsh-Hadamard transform.

143. The system of Claim 140,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of a second linear transform A2.

144. The system of Claim 143,

wherein using said at least part of said second linear transform A2 provides a scattering transform applied to a time progression generated by using at least part of a spreading linear transform A3.

145. The system of Claim 144,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of said second linear transform A2 applied to said at least part of said spreading linear transform A3.

146. A method of processing a sample list of at least two digitized samples based upon at least one electromagnetic receptor using a truncated pseudo-inverse B1 of a linear transform A1, comprising the steps of:

receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

processing said received sample list by using said truncated pseudo-inverse B1 on at least some of said received samples to create a received signal parameter list containing at least one received signal parameter;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of linear transform A1;

wherein said linear transform A1 includes an IFFT of 64 points as specified in IEEE 802.11a; and

wherein said truncated pseudo-inverse B1 provides at least an approximation of the 52 active frequency bins of the IEEE 802.11a physical layer during data transmission; and

wherein said truncated pseudo-inverse B1 of said linear transform A1 is based upon a pseudo-inverse of A1 belonging to at least one member of the pseudo-inverse type collection comprising A1{1}, A1{2}, A1{3}, A1{4}, a Drazin inverse of A1, and a Moore-Penrose inverse A1{1,2,3,4}.

147. The method of Claim 146,

wherein said electromagnetic receptor includes at least one antenna element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field proximate with said antenna element.

148. The method of Claim 147,

wherein said electromagnetic receptor includes at least two antenna elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from said electromagnetic fields proximate with said antenna elements.

149. The method of Claim 146,

wherein said electromagnetic receptor includes at least one semiconductor receptor element; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor element.

150. The method of Claim 149,

wherein said electromagnetic receptor further includes at least two semiconductor receptor elements; and

wherein said sample list based upon said electromagnetic receptor is further derived from an electromagnetic field based upon the bulk transport properties of said semiconductor receptor elements.

151. The method of Claim 146,

wherein said electromagnetic receptor is comprised of a first electromagnetic receptor and a second electromagnetic receptor.

152. The method of Claim 151,

wherein the step receiving said sample list based upon said electromagnetic receptor is further comprised of at least one of the collection comprising the steps of:

receiving a first sample list based upon said first electromagnetic receptor to create said received sample list containing at least two received samples; and

receiving a second sample list based upon said second electromagnetic receptor to create said received sample list containing at least two received samples.

153. The method of Claim 152,

wherein the step receiving said first sample list based upon said first electromagnetic receptor is further comprised of the step of:

receiving a first sample list based upon said first electromagnetic receptor to create a first received sample list containing at least two received first samples; and

wherein the step receiving said second sample list based upon said second electromagnetic receptor is further comprised of the step of:

receiving a second sample list based upon said second electromagnetic receptor to create a second received sample list containing at least two received second samples.

154. The method of Claim 153,

wherein the step processing said received sample list is further comprised of at least one member of the collection comprising the steps of:

processing said first received sample list by using said truncated pseudo-inverse B1 on at least some of said first received samples to create a first received signal parameter list containing at least one first received signal parameter; and

processing said second received sample list by using said truncated pseudo-inverse B1 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

155. The method of Claim 153,

wherein the step processing said received sample list is further comprised of the step of:

processing said second received sample list by using a second truncated pseudo-inverse B2 on at least some of said second received samples to create a second received signal parameter list containing at least one second received signal parameter.

156. The method of Claim 146,

wherein said truncated pseudo-inverse B1 contains at least a third truncated pseudo-inverse B3 and a fourth truncated pseudo-inverse B4;

wherein the step processing said received sample list further comprises the steps of:

processing said second received sample list by using said third truncated pseudo-inverse B3 on at least some of said received samples to create a third received signal parameter list containing at least one third received signal parameter; and

processing said second received sample list by using said fourth truncated pseudo-inverse B3 on at least some of said received samples to create a fourth received signal parameter list containing at least one fourth received signal parameter.

157. A method of determining availability of a first communications service based upon said third truncated pseudo-inverse B3 and of a second communications service based upon said fourth truncated pseudo-inverse B4 using the method of Claim 156, further comprising the steps of:

determining said first communications service availability based upon said third received signal parameter list to create a first communication service determination; and

determining said second communications service availability based upon said fourth received signal parameter list to create a second communication service determination.

158. The method of Claim 157,

wherein the step determining said first communications service availability is further comprised of the steps of:

detecting system communication based upon said third received signal parameter list to create a first system channel detection; and

generating said first communications service determination based upon said first system channel detection.

159. The method of Claim 157,

wherein the step determining said second communications service availability is further comprised of the steps of:

estimating a first energy term based upon said fourth received signal parameter list and a second energy term based upon said fourth received signal parameter list; and

generating said second communications service determination based upon said first energy estimate exceeding said second energy estimate multiplied by a threshold value.

160. The method of Claim 159,

wherein said second communications service determination includes a Clear Channel Access determination.

161. The method of Claim 146, further comprising the step of:

processing said received sample list by using a fifth truncated pseudo-inverse B5 to at least some of said received samples to create a second received signal parameter list containing at least one second received signal parameter.

162. The method of Claim 161,

wherein said fifth truncated pseudo-inverse B5 provides at least an approximation of the 12 active frequency bins of the IEEE 802.11a physical layer during header transmission.

163. The method of Claim 146,

wherein said sample list is further based upon a transported version of a baseband signal progression generated using at least part of linear transform A1.

164. The method of Claim 163,

wherein said baseband signal progression is generated as a signal progression using at least part of a second linear transform A2.

165. The method of Claim 164,

wherein said second linear transform A2 is approximately similar to a Hadamard transform.

166. The method of Claim 165,

wherein said second linear transform A2 is further approximately similar to a Walsh-Hadamard transform.

167. The method of Claim 164,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of a second linear transform A2.

168. The method of Claim 167,

wherein using said at least part of said second linear transform A2 provides a scattering transform applied to a time progression generated by using at least part of a spreading linear transform A3.

169. The method of Claim 168,

wherein said truncating pseudo-inverse B1 approximates a pseudo-inverse of said at least part of linear transform A1 applied to said at least part of said second linear transform A2 applied to said at least part of said spreading linear transform A3.

170. A program system implementing the method of Claim 146,

wherein said program system controlling reception of communications encoded as a time progression using said linear transformation A1 through the execution of program steps implementing at least the steps of the method,

wherein said program system is comprised of said program steps residing in memory accessibly coupled to at least one processing engine receptively coupled to said electromagnetic receptors to provide said digitized samples.

171. A system for processing a sample list of at least two digitized samples based upon at least one electromagnetic receptor using a truncated pseudo-inverse B1 of a linear transform A1 implementing the method of Claim 146, comprising:

means for receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples; and

means for processing said received sample list by using said truncated pseudo-inverse B1 to at least some of said received samples to create a received signal parameter list containing at least one received signal parameter;

wherein said sample list is based upon a transported version of a signal progression generated using at least part of linear transform A1.

172. The system of Claim 171,

wherein said means for receiving said sample list based upon said electromagnetic receptor to create a received sample list containing at least two received samples, is further comprised of:

a finite state machine controlling a buffer memory containing at least two memory locations through the operation of at least two finite states of a finite states of said finite state machine; and

said buffer memory receptively coupled to said electromagnetic receptor;

wherein said finite state machine operating through said at least two finite states causes said buffer memory to contain said received samples contained in said received sample list.

173. The system of Claim 171,

wherein said means for processing said received sample list by using said truncated pseudo-inverse B1 is further comprised of:

an arithmetic circuit implementing said truncated pseudo-inverse B1 acting on at least some of said received samples to create said received signal parameter list containing said at least one received signal parameter;

wherein said means for receiving said received sample list provides said received samples to said arithmetic circuit.

174. The system of Claim 173,

wherein said arithmetic circuit implementing said truncated pseudo-inverse B1 is controlled by a second finite state machine.

175. The system of Claim 174,

wherein said second finite state machine includes a state register containing a program counter.

176. The system of Claim 173,

wherein said arithmetic circuit implementing said truncated pseudo-inverse B1 is controlled strictly by input-output stimulus.